

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board

Paper No. 43

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte TRUNG T. DOAN, RANDHIR P. S. THAKUR  
and YAUH-CHING LIU

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Appeal No. 1999-1548  
Application 08/859,629

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ON BRIEF

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Before KRASS, DIXON and BARRY, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

This is a decision on appeal from the final rejection of claims 53-98, all of the claims pending.

The invention is directed to a semiconductor device and making the surface thereon very flat during fabrication. More particularly, three layers are used that provide for the desired planarization effect. This is done by selecting thermal coefficients of the materials so that the device may be subjected to a reflow process without producing the buckling effects of prior art devices.

Representative independent claim 53 is reproduced as follows:

53. A semiconductor device comprising:

Appeal No. 1999-1548  
Application 08/859,629

a semiconductor substrate;

a first planarization layer supported by said semiconductor substrate;

a second planarization layer supported by said semiconductor substrate;

a barrier film disposed between said first planarization layer and said second planarization layer,  
said barrier film isolating said first planarization layer from said second planarization layer.

The examiner relies on the following references:

Eizenberg et al. (Eizenberg)	4,502,209	Mar. 5, 1985
Kuecher et al. (Kuecher)	4,910,580	Mar. 29, 1990
Hishida et al. (Hishida)	5,155,564	Oct. 13, 1992
Samata et al. (Samata)	5,291,058	Mar. 1, 1994 (filed July 30, 1992)
Maeda et al. (Maeda)	5,442,226	Aug. 15, 1995 (filed Apr. 26, 1993) <sup>1</sup>

Claims 53-98 stand rejected under 35 U.S.C. § 112, second paragraph. Claims 53-98 stand further rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner cites, alternatively, 1. Kuecher and Eizenberg; 2. Samata and Maeda, independently or together; 3. Hishida.

Reference is made to the brief and answer for the respective positions of appellants and the examiner.

### OPINION

Turning first to the rejection of the claims under 35 U.S.C. §112, second paragraph, the examiner contends that the claims fail to set forth the subject matter which applicants regard as their invention. The examiner refers to Paper No. 7 (filed February 27, 1995) wherein appellants

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<sup>1</sup> We note that Maeda is filed after appellants' earliest claim of priority of March 19, 1993 and may not qualify as prior art under 35 U.S.C. § 102(e).

state that they “are unsure whether amending the claims...to use the language ‘consisting essentially of’ will place the claims in condition for allowance.” The examiner says that this statement “indicates that the invention is different from what is defined in the claim(s) because the claims fail to maintain components to be a Markush list” [answer-page 4].

We will not sustain the rejection of claims 53-98 under 35 U.S.C. § 112, second paragraph, as the examiner has failed to point to anything in the claims which indicates that appellants have failed to point out and distinctly claim that which they regard as their invention. The claims set forth a specific, albeit broad, structure. For example, claim 1 recites a semiconductor device with a substrate, two planarization layers and a barrier film between the planarization layers. Thus, it is clear that appellants consider such a structure to constitute their invention and it is improper, as well as unfair, for the examiner to tell appellants what appellants’ invention comprises and to require appellants to recite a Markush-type of claim. We find nothing in the language of Paper No. 7, identified by the examiner, indicating that appellants are not defining that which they regard as their invention.

We now turn to the rejections of claims 53-98 under 35 U.S.C. § 103.

As to these rejections, we remand the application to the examiner for further information and/or arguments by appellants and the examiner regarding “planarization” layers.

While the examiner applies various references against the claims, it is unclear where and why the examiner finds “planarization” layers therein. For example, in applying Kuecher, the

examiner identifies a first layer 5, barrier layer 6 and silicon layer 9. The examiner says that these “directly correspond to the limitations of the ‘first planarization layer’, ‘barrier film’, and ‘second planarization, respectively” [answer-page 5]. Thus, the examiner identifies the first layer 5 of Kuecher as the “first planarization layer” and “silicon layer 9” of Kuecher as the “second planarization layer.” However, it is not clear from the examiner’s rejection why the examiner considers these layers to be “planarization” layers. Similarly, with regard to the other applied references, the examiner is required to set forth the rationale for identifying various elements in the applied references as “planarization” layers. What is it, in the examiner’s opinion, that makes the various layers in the applied references “planarization” layers?

With regard to the claims reciting the first, second and third coefficients of thermal expansion, if the examiner maintains these rejections, the examiner is directed to show exactly how the terms of the claim are met. That is, rather than merely contend that claims 65 and 75 “are merely recitations of the same materials, in functional form, i.e. thermal expansion and reflow temperatures of these same materials” [answer-page 10], the examiner is directed to show that the coefficients of thermal expansion of the materials in the applied references are such as to meet the claim limitations, i.e., the second coefficient of thermal expansion being substantially smaller than said first and third coefficients of thermal expansion.

On the appellants’ side, appellants argue that there is no teaching in the references of layers forming a “function of planarizing” [e.g., brief-page 13], but appellants never define what is meant by a “planarizing” function. The instant specification also does not appear to define this

term. If this appeal is maintained, Appellants are directed to submit additional comments as to why, exactly, in view of the rather broad nature of many of the claims, the layers identified by the examiner in the applied references are not "planarization" layers. If the term is meant only to indicate a "flat" surface, then appellants should explain why the layers in the applied references are not "flat." If "planarization" is meant to indicate a certain degree of flatness not shown by the applied references, then appellants should explain where, in the instant specification, there is support for such an interpretation.

With regard to the claim limitations reciting the relationship between coefficients of thermal expansion, rather than stating, generally, that "neither reference discusses the coefficients of thermal expansion in independent claim 65, the reflow temperatures recited in independent claim 75, nor the combination of layers recited in independent claim 86" [brief-page 15], appellants are directed to identify the coefficients of thermal expansion of the particular materials, or layers, in the references, as applied by the examiner, and to show, either by argument or by objective evidence, that the coefficients of thermal expansion of those materials, reflow temperatures and the combination of layers are not as claimed.

Accordingly, both appellants and the examiner are directed to submit additional arguments regarding the meaning to be given "planarization" layers, as claimed and to submit specific showings of the coefficients of thermal expansion of the materials shown in the applied references in order to demonstrate that the coefficients of thermal expansion of such materials are, or are not, as claimed.

Appeal No. 1999-1548  
Application 08/859,629

This case is remanded to the examiner for action consistent with our directions herein.

This application, by virtue of its "Special" status, requires an immediate action, MPEP § 708.01 (7th ed., July, 1998). It is important that the Board be informed promptly of any action affecting the appeal in this case.

REVERSED and REMANDED

Errol A. Krass	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
Joseph L. Dixon	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
Lance Leonard Barry	)	
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